List of Claims:

Claim 1 (Previously Presented): A method of encoding a picture (n) in a sequence of pictures (1 to n) using an encoder, said method comprising the steps of:

assigning, by said encoder, a pre-decoder buffer removal time to said picture;

constraining, by said encoder, an initial arrival time of said picture into said pre-decoder buffer by selecting, for said picture, a number of bits, wherein said time-equivalent of said number of bits is no greater than a difference based on said pre-decoder buffer removal time of said picture and said initial arrival time of said picture into a pre-decoder buffer;

compressing, by said encoder, said picture to generate said number of bits;

transmitting, by said encoder, said picture to said pre-decoder buffer in compliance with said initial arrival time, wherein said initial arrival time of said picture into said pre-decoder buffer is in accordance with:

$$t_{ai}(n) = \max\{\ t_{af}(n\text{-}1),\ t_c \times \sum_{i=1}^{n} pre\_dec\_removal\_delay(n)\},$$

where $t_{ai}(n)$ is said initial arrival time of said picture into said pre-decoder buffer, $t_{af}(n\text{-}1)$ is a final arrival time of a previous picture (n-1) into said pre-decoder buffer, t_c is a clock tick, and $\sum_{i=1}^{n} pre\_dec\_removal\_delay(n)$ is a sum of removal delays of said sequence of pictures (1 to n).

Claim 2 (Previously Presented): The method of claim 1 further comprising the steps of:

allocating a first number of bits for compressing said picture and one or more number of

bits for compressing one or more future pictures, wherein said future pictures are in said pre-decoder buffer at said pre-decoder buffer removal time of said picture;

determining, based on said numbers of bits in said allocating step, which of said future pictures will be in said pre-decoder buffer at said pre-decoder buffer removal time of said picture;

changing said first number of bits for compressing said picture to allocate a final number of bits for compressing said picture if said changing is needed to prevent pre-decoder buffer overflow or underflow; and

compressing said picture using said final number of bits.

Claim 3 (Previously Presented): The method of claim 1 further comprising the steps of:

determining a first limit on a number of bits for compressing said picture and one or more number of bits for compressing one or more future pictures, wherein said future pictures are in said pre-decoder buffer at said pre-decoder buffer removal time of said picture; and

compressing said picture using a first number of bits, wherein said first number of bits complies with said first limit.

Claim 4 (Original): The method of claim 3, wherein said first limit is an upper limit and said first number of bits is not higher than said upper limit.

Claim 5 (Original): The method of claim 3, wherein said first limit is lower limit and said first number of bits is not lower than said lower limit.

Claim 6 (Previously Presented): The method of claim 3 further comprising the step of:

determining a second limit on a number of bits for compressing said picture;

wherein said first limit is an upper limit and said second limit is a lower limit, and wherein said first number of bits is not higher than said upper limit and said first number of bits is not lower than said lower limit.

Claim 7 (Original): The method of claim 2 further comprising the step of:

determining an upper limit and a lower limit on said first number of bits for compressing said picture, wherein said first number of bits is not higher than said upper limit and said first number of bits is not lower than said lower limit.

Claim 8 (Previously Presented): An encoder for encoding a picture (n) in a sequence of pictures (1 to n), said encoder comprising:

a compressor configured to compress said picture to generate a number of bits;

wherein said encoder is configured to assign a pre-decoder buffer removal time to said picture;

wherein said encoder is further configured to constrain an initial arrival time of said picture into said pre-decoder buffer by selecting, for said picture, said number of bits, wherein said time-equivalent of said number of bits is no greater than a difference based on said pre-decoder buffer removal time of said picture and said initial arrival time of said picture into a pre-decoder buffer;

a transmitter configured to transmit said picture to said pre-decoder buffer in compliance with said initial arrival time, wherein said initial arrival time of said picture into said pre-decoder buffer is in accordance with:

$$t_{ai}(n) = \max\{\ t_{af}(n-1),\ t_c \times \sum_{i=1}^{n}\ pre\_dec\_removal\_delay(n)\},$$

where $t_{ai}(n)$ is said initial arrival time of said picture into said pre-decoder buffer, $t_{af}(n-1)$ is a final arrival time of a previous picture (n-1) into said pre-decoder buffer, t_c is a clock tick, and $\sum_{i=1}^{n}\ pre\_dec\_removal\_delay(n)$ is a sum of removal delays of said sequence of pictures (1 to n).

Claim 9 (Previously Presented): The encoder of claim 8, wherein said encoder allocates a first number of bits for compressing said picture and one or more number of bits for compressing one or more future pictures, wherein said future pictures are in said pre-decoder buffer at said pre-decoder buffer removal time of said picture;

wherein said encoder determines, based on said numbers of bits, which of said future pictures will be in said pre-decoder buffer at said pre-decoder buffer removal time of said picture;

wherein said encoder changes said first number of bits for compressing said picture to allocate a final number of bits for compressing said picture if needed to prevent pre-decoder buffer overflow or underflow; and

wherein said compressor compresses said picture using said final number of bits.

Claim 10 (Previously Presented): The encoder of claim 8, wherein said encoder determines a first limit on a number of bits for compressing said picture and one or more number of bits for compressing one or more future pictures, wherein said future pictures are in said pre-decoder buffer at said pre-decoder buffer removal time of said picture; and

wherein said compressor compresses said picture using a first number of bits, wherein said first number of bits complies with said first limit.

Claim 11 (Original): The encoder of claim 10, wherein said first limit is an upper limit and said first number of bits is not higher than said upper limit.

Claim 12 (Original): The encoder of claim 10, wherein said first limit is lower limit and said first number of bits is not lower than said lower limit.

Claim 13 (Previously Presented): The encoder of claim 10, wherein said encoder determines a second limit on a number of bits for compressing said picture, and wherein said first limit is an upper limit and said second limit is a lower limit, and wherein said first number of bits is not higher than said upper limit and said first number of bits is not lower than said lower limit.

Claim 14 (Original): The encoder of claim 9, wherein said encoder determines an upper limit and a lower limit on said first number of bits for compressing said picture, wherein said first number of bits is not higher than said upper limit and said first number of bits is not lower than said lower limit.

Claims 15-21 (Cancelled)

Claim 22 (Previously Presented): The method of claim 1, wherein said initial arrival time of said picture into said pre-decoder buffer is no earlier than a difference between an encoder processing time of said picture and an encoder processing time of said previous picture.

Claim 23 (Previously Presented): The encoder of claim 8, wherein said initial arrival time of said picture into said pre-decoder buffer is no earlier than a difference between an encoder processing time of said picture and an encoder processing time of said previous picture.

Claim 24 (Cancelled)

Claim 25 (Previously Presented): A method of encoding each picture in a sequence of pictures using an encoder, said method comprising the steps of:

assigning, by said encoder, a pre-decoder buffer removal time to said picture;

constraining, by said encoder, an initial arrival time of said picture into said pre-decoder buffer by selecting, for said picture, a number of bits, wherein said time-equivalent of said number of bits is no greater than a difference based on said pre-decoder buffer removal time of said picture and said initial arrival time of said picture into a pre-decoder buffer;

compressing, by said encoder, said picture to generate said number of bits;

transmitting, by said encoder, said picture to said pre-decoder buffer in compliance with

said initial arrival time;

allocating a first number of bits for compressing said picture and one or more number of bits for compressing one or more future pictures, wherein said future pictures are in said pre-decoder buffer at said pre-decoder buffer removal time of said picture;

determining, based on said numbers of bits in said allocating step, which of said future pictures will be in said pre-decoder buffer at said pre-decoder buffer removal time of said picture;

changing said first number of bits for compressing said picture to allocate a final number of bits for compressing said picture if said changing is needed to prevent pre-decoder buffer overflow or underflow; and

compressing said picture using said final number of bits.

Claim 26 (Previously Presented): The method of claim 25 further comprising the step of:

determining an upper limit and a lower limit on said first number of bits for compressing said picture, wherein said first number of bits is not higher than said upper limit and said first number of bits is not lower than said lower limit.

Claim 27 (Previously Presented): An encoder for encoding a picture in a sequence of pictures, said encoder comprising:

a compressor configured to compress said picture to generate a number of bits;

wherein said encoder is configured to assign a pre-decoder buffer removal time to said

picture;

wherein said encoder is further configured to constrain an initial arrival time of said picture into said pre-decoder buffer by selecting, for said picture, said number of bits, wherein said time-equivalent of said number of bits is no greater than a difference based on said pre-decoder buffer removal time of said picture and said initial arrival time of said picture into a pre-decoder buffer;

a transmitter configured to transmit said picture to said pre-decoder buffer in compliance with said initial arrival time;

wherein said encoder allocates a first number of bits for compressing said picture and one or more number of bits for compressing one or more future pictures, wherein said future pictures are in said pre-decoder buffer at said pre-decoder buffer removal time of said picture;

wherein said encoder determines, based on said numbers of bits, which of said future pictures will be in said pre-decoder buffer at said pre-decoder buffer removal time of said picture;

wherein said encoder changes said first number of bits for compressing said picture to allocate a final number of bits for compressing said picture if needed to prevent pre-decoder buffer overflow or underflow; and

wherein said compressor compresses said picture using said final number of bits.

Claim 28 (Previously Presented): The encoder of claim 27, wherein said encoder determines an upper limit and a lower limit on said first number of bits for compressing said picture, wherein said first number of bits is not higher than said upper limit and said first number

of bits is not lower than said lower limit.

Claims 29-30 (Cancelled)